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COPING WITH THE LATE-LIFE COMPLICATIONS OF POLIO

Although an aggressive vaccination program that began in the 1950s has eradicated polio in the United States, a more recently recognized complication known as post-polio syndrome (PPS) has unexpectedly thrust the crippling, sometimes fatal, viral infection back into the spotlight. Most people born before 1950 can recall the devastating polio epidemics that swept the nation beginning in 1916 and ending in 1955. At the height of the epidemics, as many as 60,000 Americans contracted polio in a single year and 3,000 died. In those who recovered, some degree of muscle impairment often remained.

Metal braces, iron lungs (machines to aid breathing), swimming pool closures, and canceled public events are hallmarks that still define the era. Today, there are more than 640,000 polio survivors in the United States. Virtually all are at risk for PPS and up to half will eventually develop it.

Although there is no cure, lifestyle measures can minimize symptoms and may reduce the likelihood that they will occur.

A SECOND WAVE OF NERVE DAMAGE

Polio is caused by a virus that attacks the anterior horn cells, nerve cells in the spinal cord that communicate with muscle cells. When this interaction is impaired, muscles can't function properly and paralysis may result. In some cases, people lose the ability to move an arm or a leg. In others,

impairment of muscles around the chest and diaphragm may interfere with breathing. Although the virus can destroy countless nerve cells, some manage to survive and eventually establish new links with muscle cells. This explains why many survivors have been able to regain at least some use of affected muscles.

PPS is a slowly progressive, degenerative disorder that usually appears 10 to 50 years after the initial infection. The condition is rarely fatal, except in those with severe breathing problems, and the severity of PPS symptoms often correlates with the severity of the original polio symptoms. Sufferers typically experience generalized fatigue, muscle and joint pain, muscle weakness, breathing difficulties, dysphagia (problems with swallowing), and depression.

Severe breathing problems are most likely to occur in those who needed an iron lung during their initial episode. Restrictive lung disease, a condition in which the lungs and ribs do not expand normally owing to weakness in the diaphragm and chest muscles, is one of the more common pulmonary manifestations of PPS. Sleep apnea, temporary breathing interruptions that occur during sleep, is another. If dysphagia is a problem, the possibility of choking is a serious concern. People with dysphagia often feel as if food is stuck in the throat, and sufferers may cough when trying to eat.

LIVING WITH PPS

Diagnosing PPS is no easy task, as it can be difficult to distinguish between preexisting and new neuromuscular deficits. Furthermore, only in recent years, as more polio survivors have begun to develop PPS, has the medical community learned to recognize the condition. Diagnosis is based on ruling out other medical problems (such as Parkinson's disease, arthritis, chronic fatigue syndrome, and multiple sclerosis) that might be causing symptoms. Strength tests, brain imaging, muscle biopsies, and spinal fluid analysis are among the tools used. The initial evaluation is best done by a neurologist. Long-term management can be handled by a general practitioner, a physical therapist, or a pulmonologist if breathing problems are involved.

Treatment involves a variety of measures aimed at relieving discomfort and maintaining strength:

- **Exercise.** When tailored to each patient's individual abilities, a carefully supervised exercise program can improve strength, relieve pain, and minimize fatigue. The chosen activities may be as mild as gentle stretching and yoga or as intense as aerobics and weight-training. Too much physical activity, however, could induce further muscle weakness. Minor fatigue and soreness are normal after a workout, but

tiredness and pain persisting beyond an hour indicate that muscles have been overused. General fatigue can be minimized by planning activities around energy highs and lows, and by using assistive devices (such as walkers, canes, wheelchairs, grab bars, and elevated seats).

- **Medications.** While over-the-counter medications may relieve occasional muscle soreness, prescription medications (usually a muscle relaxant or a tricyclic antidepressant) are required for persistent discomfort. A medication called pyridostigmine (Mestinon) may help reduce muscle fatigue and weakness.

- **Dietary changes.** Dysphagia can be minimized by choosing soft, easy-to-swallow foods; eating smaller, more frequent meals; avoiding eating when tired; and making an effort not to swallow with the head tilted back or while talking.

In addition, breathing problems can be addressed with supplementary oxygen, and some PPS patients report that transcutaneous electrical nerve stimulation (TENS) is an effective pain reliever. Experimental therapies are also being evaluated. Among the more promising are body chemicals known as neurotropic factors, which nourish and may possibly even regenerate nerve cells.